

## PATENT COOPERATION TREATY

RECEIVED

DEC 06 2004

ELI LILLY AND COMPANY  
Patent Division

PCT

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Ivan J. Burnside **DLW**  
ELI LILLY AND COMPANY  
P.O. Box 6288  
Indianapolis, IN 46206-6288  
ETATS-UNIS D'AMERIQUENOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

01 FEB 2005

Date of mailing  
(day/month/year)

30.11.2004

Applicant's or agent's file reference  
X-14988 ✓

## IMPORTANT NOTIFICATION

International application No.  
PCT/US 03/23266 ✓  
**20 0**International filing date (day/month/year)  
15.08.2003Priority date (day/month/year)  
20.08.2002Applicant  
ELI LILLY AND COMPANY

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Siefert, A

Tel. +49 89 2399-2469





**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

|  |  |   |
|--|--|---|
| Applicant's or agent's file reference<br><b>X-14988</b>  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) |   |
| International application No.<br><b>PCT/US 03/23266</b>  | International filing date (day/month/year)<br><b>15.08.2003</b>  | Priority date (day/month/year)<br><b>20.08.2002</b> |
| International Patent Classification (IPC) or both national classification and IPC<br><b>C07D223/14</b> |  |   |
| Applicant<br><b>ELI LILLY AND COMPANY</b>  |  |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

|   |  |
|---|--|
| Date of submission of the demand<br><br><b>18.02.2004</b>   | Date of completion of this report<br><br><b>30.11.2004</b>   |
| Name and mailing address of the international preliminary examining authority:<br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized Officer<br><br><b>Hanisch, I</b><br><br>Telephone No. +49 89 2399-7880<br> |

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/US 03/23266**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-48 as originally filed

**Claims, Numbers**

1-15 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US 03/23266

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 1,4-7,9-15(all part)

because:

☒ the said international application, or the said claims Nos. 10-15 with respect to industrial applicability relate to the following subject matter which does not require an international preliminary examination (specify):

**see separate sheet**

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 1,4-7,9-15(all part)

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                               |             |      |
|-------------------------------|-------------|------|
| Novelty (N)                   | Yes: Claims | 4-15 |
|                               | No: Claims  | 1-3  |
| Inventive step (IS)           | Yes: Claims |      |
|                               | No: Claims  | 1-15 |
| Industrial applicability (IA) | Yes: Claims | 1-9  |
|                               | No: Claims  |      |

2. Citations and explanations

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US 03/23266

Relevant prior art is provided by

- (A) Coll. Czech. Chem. Commun. 1973, 38, 2989-2995
- (B) US 4210749
- (C) EP 1057814
- (D) WO 9846590
- (E) WO 03006466
- (F) EP 0982300
- (G) WO 9303015
- (H) J. Biol. Chem. 2000, 275(47), 36781-36786

It should be noted that (B)-(D) are not considered in this report since they relate to the only arbitrarily searched subject-matter, i.e. those compounds of formula I wherein  $R_1=R_2$ =hydrogen (see Item III). They are merely added as further information. Moreover, (E) as an intermediate document is not considered either during the international phase.

**Re Item III.**

Since the initial phase of the search revealed such a large number of documents relevant to the issue of novelty that it appeared to be impossible to determine which parts of the claim(s) may be said to define subject-matter for which protection might legitimately be sought (Article 6 PCT) the search has been restricted to those compounds of formula I in which one of  $R_1$  and  $R_2$  represents hydrogen and the other one "OR3NR4R5" according to claims 2,3 and 8 as well as claims 1,4-7 and 9-15 insofar as they relate to the compounds of claims 2,3 and 8, thereby including all of the examples. Consequently, examination during the international procedure is restricted to the same subject-matter.

Moreover, claims 10-15 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1 (iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject matter of these claims (Article 34(4)(a)(i)PCT).

**Re Item V.**

**Novelty**

(A) discloses specific compounds falling within the scope of current claims 2 and 3 which are therefore not novel in the sense of Article 33(2) PCT. However, the current compounds appear to be novel over (F) essentially on account of their

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US 03/23266

fused seven-membered heterocycle and novel over (G) essentially on account of the group "NR4R5".

**Inventive Step**

The problem underlying the current application appears to be the provision of further selective histamine H3 receptor antagonists for the treatment of i.a. obesity.

(F) apparently represents the closest prior art disclosing compounds of the desired activity. (F) states that the important structural part of the compounds is the amine group which ensures their affinity towards the H3 receptor. The rest of the molecule is varied broadly in (F), further underlining the essentiality of the amine group. Therefore, when looking for a solution to the given problem the skilled person would automatically contemplate further variations of the said unessential part of the compounds of (F) and would thus arrive at the present solution without any inventive effort: The present group "R3NR4R5" corresponds to the essential part of the compounds of (F) and the only difference of the present formula (I) to that of (F) consists in the enlargement of the saturated ring of the condensed system (see example 27 of (F)) by one or two further ring members ("C" or "N"). The resulting benzazepine structure, moreover, is already known to be effective in the treatment of obesity from (G). An inventive step in the sense of Article 33(3) PCT could therefore only be acknowledged if an unexpected improvement vis-à-vis the closest prior art was shown. It should be noted that the said effect has to be present over the whole claimed scope.

**Industrial Applicability**

For the assessment of present claims 10-15 on the question whether they are industrially applicable, no unified criteria exists in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.